Sandia National Laboratories

Fact Sheet

Visualization Design Center

Solving Problems...
through improved comprehension,
collaboration, and communication.

The Visualization Design Center (VDC) is Sandia/California's premiere collaborative visualization environment. High-fidelity display systems and advanced computing resources provide an ideal platform for scientific visualization, nuclear weapon design and simulation, and decision analysis applications.

Two high-resolution, large-area projection systems provide users with a variety of display configurations. A large curved display can project a single continuous wide-format image for an immersive sensation, or three independent images from multiple data sources. A 4x3 video wall projects highly detailed images from large-scale data sets at nearly 16 million-pixel resolution.

The VDC's display systems are linked to teraflop and commodity cluster computing assets through high-speed networks, providing users with new tools for visualizing and comprehending large-scale data sets. Custom software applications provide users with ready access to these advanced tools.

The VDC's collaborative tools include videoconferencing and shared-data applications to provide interactive participation with remote sites. The VDC staff provides exceptional customer support to enable a complex combination of commercial and custom software applications, advanced computing platforms, and high-resolution display systems.

The Visualization Design Center's advanced display systems, computer resources, and software tools enable designers to better comprehend complex systems.

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By using the 16-million pixel tiled display, Sandia engineers can examine small features of detailed finite element models without losing sight of the larger context.

Weapons Design/Simulation

The VDC provides an environment where multi-disciplinary teams meet to actively evaluate and modify weapon designs in real time. The large, high-fidelity displays promote faster comprehension of complex systems and a high level of participation, resulting in improved designs, fewer design iterations, and reduced cycle time.

Scientific Visualization

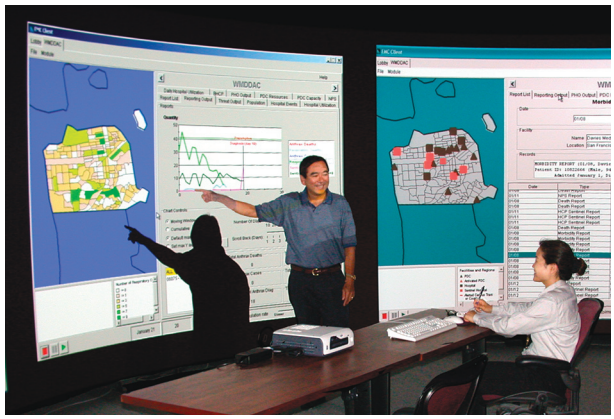
The VDC is the only Sandia/CA facility where Advanced Simulation and Computing (ASC) large-scale data sets can be displayed at the extremely high resolution required for visual scientific discovery. The VDC's Linux visualization clusters are linked to Sandia's CPlant computer cluster and LLNL's ASC White through high-speed networks. Custom ASC applications enable the real-time display and manipulation of complex models.

3D Telemetry Visualization: IDF-3

The VDC provided an interactive 3-D environment for Sandia's first successful real-time communications with an in-flight test vehicle, IDF-3. A graphics interface module converted incoming telemetry data to project a simulated moving vehicle over a map on the VDC's panoramic display system. Additional sensor data from 20 "quick look" parameters were displayed simultaneously on the video wall to provide test engineers access to flight data as the test proceeded.

Decision Analysis Simulations: WMD-DAC

The VDC is an enabling site for Sandia's Homeland Defense simulation programs. It is host to the Weapons of Mass Destruction-Decision Analysis Center (WMD-DAC). The large display systems immerse participants in an environment where multiple data streams present critical data to facilitate rapid decision-making in real-world threat exercises. The data-intensive environment elevates the simulation well beyond the typical exercise, providing participants with a valuable learning experience.



WMD-DAC exercise participants analyze incoming data in a simulated anthrax attack.

Learn more at
http://www.ca.sandia.gov/vdc/index.html

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